New Hampshire

Only nine other States and the District of Columbia had smaller populations than New Hampshire in 1996. Even though it is a relatively small State, it has been one of the leaders in the move toward competition, probably because of the fact that, at an average cost of 11.59 cents per kilowatthour, it has the second most expensive electricity in the United States. (Hawaii is first at 12.12 cents per kilowatthour.)

Most of the utility electricity in New Hampshire is generated at the Seabrook nuclear plant, the largest plant in the State. Seabrook's operator, the North Atlantic Energy Service Company, is the largest utility in the State with 1,162 megawatts of net summer capability.[1] There is also a significant amount of coal capability but it has been in a downward trend since Seabrook came on line in 1990. In fact, in 1986, utility coal units represented 34.8 percent of New Hampshire's net generation, but only 19.4 percent in 1996. Utility oil generation also fell dramatically over the same period from 38.2 percent to 4.9 percent. Also due in part to Seabrook, the State's emissions of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) decreased from 1986 to 1996.

The Clean Air Act Amendments of 1990 specified a number of utility plants to begin compliance with stricter emissions standards for SO_2 and NO_x. The law cited 460 megawatts of nameplate capacity at Public Service of New Hampshire's Merrimack plant. Emissions of SO_2, NO_x and carbon dioxide (CO_2) from New Hampshire generators ranked thirty-seventh, forty-sixth, and forty-fourth, respectively, in 1996. The concentrations of these pollutants per square mile in New Hampshire ranked twenty-first, thirty-fifth, and twenty-eighth, respectively, in 1996. Emissions of SO_2 and NO_x from New Hampshire generators were less in 1996 than they were in 1986. However, the SO_2 total for 1991 was less than the 1996 total. The NO_x total was substantially higher in 1991 than in 1996. CO_2 emissions increased in both time periods. New Hampshire is part of the Ozone Transport Commission (OTC).[2] Each of the thirteen States of the OTC is responsible for enacting regulations in order to achieve region-wide NO_x reductions in a consistent, enforceable manner and for allocating its NO_x Budget Program allowances among NO_x sources in the State. The targets in this program are large industrial boilers and all electricity generating facilities with a rated output of 15 megawatts or more.

As early as 1996, legislation was enacted that required the New Hampshire Public Utilities Commission (PUC) to implement retail choice for all customers of electric utilities under its jurisdiction by January 1998 or at the earliest date which the PUC determined to be in the public interest. The law also mandated that this could happen no later than July 1998. However, competition was delayed due to stranded costs issues. (Stranded costs in New Hampshire would be higher than average, as is the price of electricity, due to the addition of the Seabrook nuclear plant.) Even as far back as June 1995, legislation was enacted to direct the PUC to establish a statewide pilot program for retail competition for about 17,000 customers. In May 1996, the PUC began the 2-year statewide pilot program covering approximately 3 percent of the load served by 6 utilities. The results of this pilot were released in February 1997 and indicated that a 15- to 20-percent savings had been achieved. Although New Hampshire has been actively pursuing the implementation of competition for some time, delays due to battles between utilities and the PUC in State and Federal courts have caused lengthy delays. Recently, the Unitil Corporation, which includes as its subsidiaries Concord Electric, Exeter & Hampton Electric, and Fitchburg Gas & Electric, filed its restructuring settlement agreement with the PUC. Unitil will sell its New Hampshire power supply portfolio and be allowed to recover 100 percent of its stranded costs over 12 years under the agreement. Customer choice will be phased in beginning March 1, 1999.[3]

[1] The Seabrook Station has been one of the most controversial and litigated reactors in the United States. The facility provides electricity for one million New England homes—more than 8 million megawatthours of electricity a year. For 1996, it maintained an operating capacity factor of 96.8 percent. On May 10, 1997, Seabrook Station ended a 463-day run generating electricity, the longest continuous run ever by a nuclear plant in New England. It is owned jointly by 11 New England utilities. Source: http://www.nu.com/aboutNU/power/sea.htm.

[2] The Ozone Transport Region comprises the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Delaware, the northern counties of Virginia, and the District of Columbia.

[3] Energy Information Administration, Status of State Electric Utility Deregulation Activity, http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html.

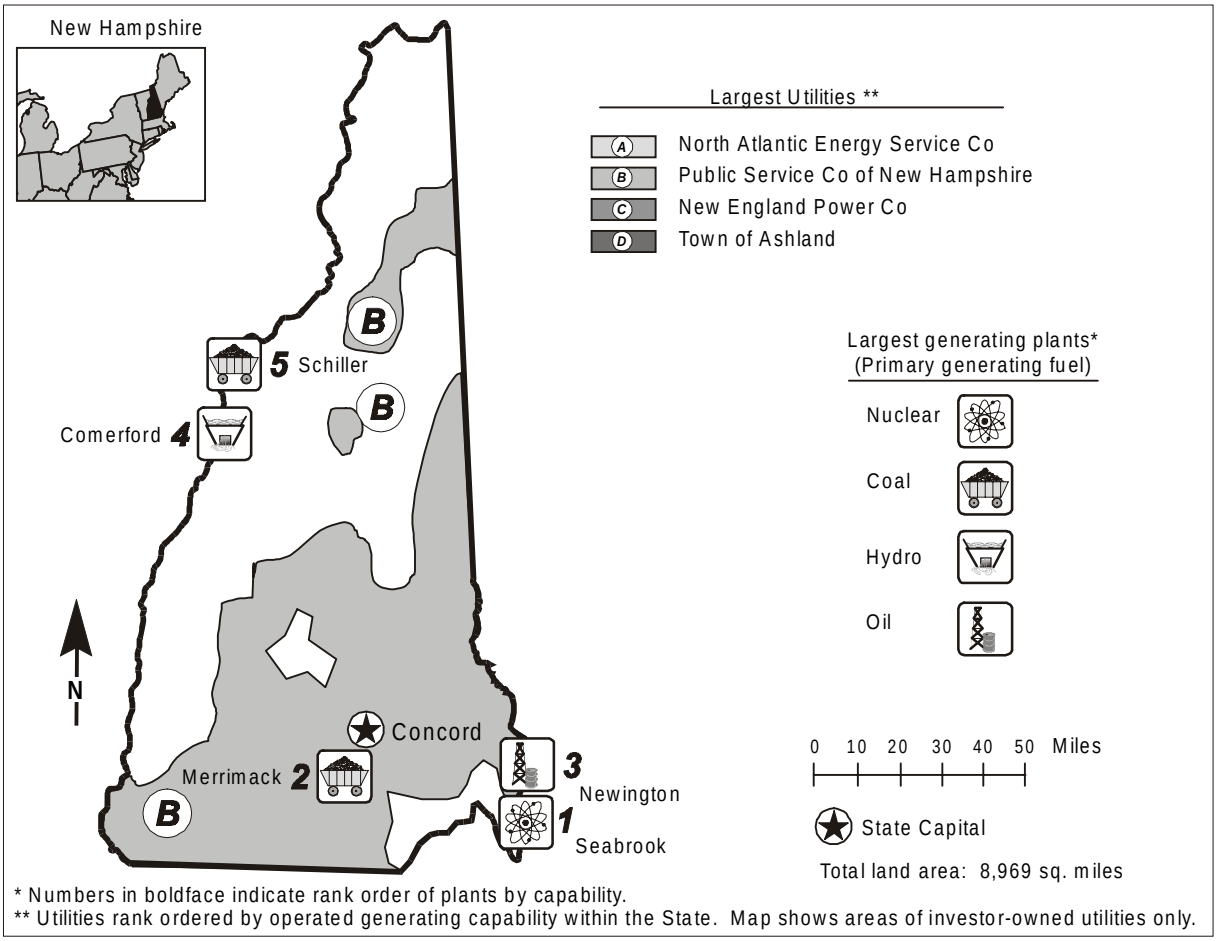

Table 1. 1996 Summary Statistics

Item	Value	U.S. Rank
NERC Region(s)		WPCC
Net Exporter or Importer		Exporter
State Primary Generating Fuel		Nuclear
Population (as of 7/96)	1,160,213	42
Average Revenue (cents/kWh)	11.59	[a]50
Industry		
Capability (MWe)	2,767	[b]39
Generation (MWh)	17,075,153	[b]36
Capability/person (KWe/person)	2.38	[b]33
Generation/person (MWh/person)	14.72	[b]19
Sulfur Dioxide Emissions (Thousand Short Tons)	50	37
Nitrogen Oxide Emissions (Thousand Short Tons)	14	46
Carbon Dioxide Emissions (Thousand Short Tons)	7,490	44
Sulfur Dioxide/sq. mile (Tons)	5.53	21
Nitrogen Oxides/sq. mile (Tons)	1.53	35
Carbon Dioxide/sq. mile (Tons)	835.09	28

Item	Value	U.S. Rank
Utility		
Capability (MWe)	2,512	44
Generation (MWh)	15,418,562	42
Average Age of Coal Plants	33 years	
Average Age of Oil-fired Plants	23 years	
Average Age of Gas-fired Plants	--	
Average Age of Nuclear Plants	6 years	
Average Age of Hydroelectric Plants	60 years	
Average Age of Other Plants	--	
Nonutility[c]		
Capability (MWe)	255	36
Percentage Share of Capability	9.2	17
Generation (MWh)	1,656,591	33
Percentage Share of Generation	9.7	17

-- = Not applicable.

Table 2. Five Largest Utility Plants, 1996

Plant Name	Type	Operating Utility	Net Capability (MWe)
1. Seabrook	Nuclear	North Atlantic Engy Serv Corp	1,162
2. Merrimack	Coal	Public Service Co of NH	467
3. Newington	Oil	Public Service Co of NH	406
4. Comerford	Hydro	New England Power Co	164
5. Schiller	Coal/Oil	Public Service Co of NH	162

Table 3. Top Four Utilities with Largest Generating Capability, and Type, Within the State, 1996
(Megawatts Electric)

Utility	Net Summer Capability	Net Coal Capability	Net Oil Capability	Net Gas Capability	Net Nuclear Capability	Net Hydro/Other Capability
A. North Atlantic Energy Svc Corp	1,162	--	--	--	1,162	--
B. Public Service Co of NH	1,130	578	489	--	--	64
C. New England Power Co	220	--	--	--	--	220
D. Town of Ashland	--	--	--	--	--	--
Total	2,512	578	489	--	1,162	284
Percentage of Industry Capability	90.8	--	--	--	--	--

-- = Not applicable.

Figure 1. Utility Generating Capability by Primary Energy Source, 1996

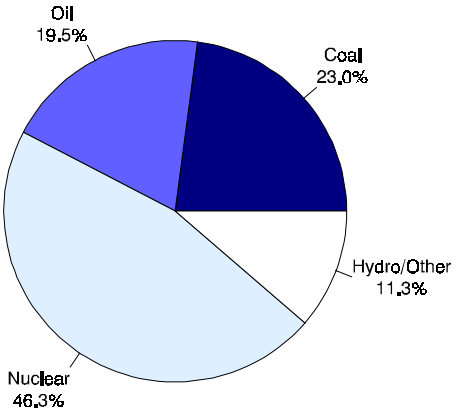

Figure 2. Utility Generation by Primary Energy Source, 1996

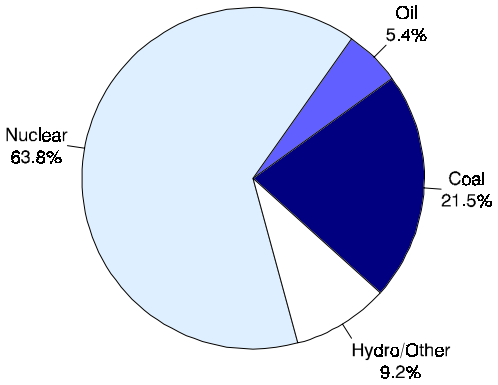

Figure 3. Energy Consumed at Electric Utilities by Primary Energy Source, 1996

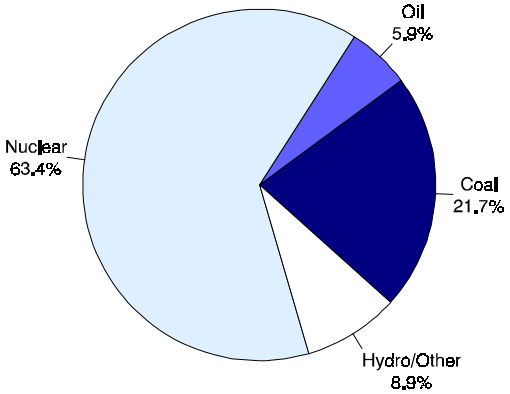

Table 4. Electric Power Industry Generating Capability by Primary Energy Source, 1986, 1991, and 1996
(Megawatts Electric)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	610	622	578	38.8	22.2	20.9
Oil	549	546	489	34.9	19.5	17.7
Gas	--	--	--	--	--	--
Nuclear	--	1,150	1,162	--	41.0	42.0
Hydro/Other	268	291	284	17.0	10.4	10.3
Total Utility	1,426	2,609	2,512	90.7	93.0	90.8
Total Nonutility	145	196	255	9.3	7.0	9.2
Industry	1,571	2,805	2,767	100.0	100.0	100.0

-- = Not applicable.

Table 5. Electric Power Industry Generation of Electricity by Primary Energy Source, 1986, 1991, and 1996
(Thousand Kilowatthours)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	2,392,477	3,168,054	3,309,695	34.8	22.6	19.4
Oil	2,621,004	1,561,485	838,243	38.2	11.2	4.9
Gas	--	(s)	280	--	(s)	(s)
Nuclear	--	6,787,851	9,844,744	--	48.5	57.7
Hydro/Other	1,104,407	1,187,758	1,425,600	16.1	8.5	8.3
Total Utility	6,117,888	12,705,147	15,418,562	89.1	90.8	90.3
Total Nonutility	750,788	1,283,512	1,656,591	10.9	9.2	9.7
Industry	6,868,676	13,988,659	17,075,153	100.0	100.0	100.0

-- = Not applicable. (s) = Nonzero percentage less than 0.05 if value is positive and greater than -0.05 if value is negative.

Table 6. Electric Power Industry Consumption by Primary Energy Source, 1986, 1991, and 1996
(Quadrillion Btu)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	0.025	0.033	0.036	24.8	21.7	18.5
Oil	0.030	0.018	0.010	29.9	11.7	5.0
Gas	--	--	(s)	--	--	--
Nuclear	--	0.073	0.105	--	48.3	53.9
Hydro/Other	0.012	0.012	0.015	11.7	8.2	7.6
Total Utility	0.066	0.136	0.165	66.4	89.9	85.0
Total Nonutility	0.033	0.015	0.029	33.6	10.1	15.0
Industry	0.099	0.151	0.194	100.0	100.0	100.0

-- = Not applicable. (s) = Nonzero value less than 0.0005.

Figure 4. Utility Generation of Electricity by Primary Energy Source, 1986-1996

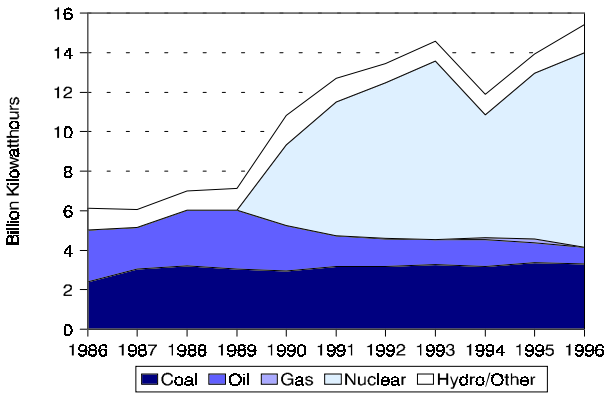

Figure 5. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986-1996

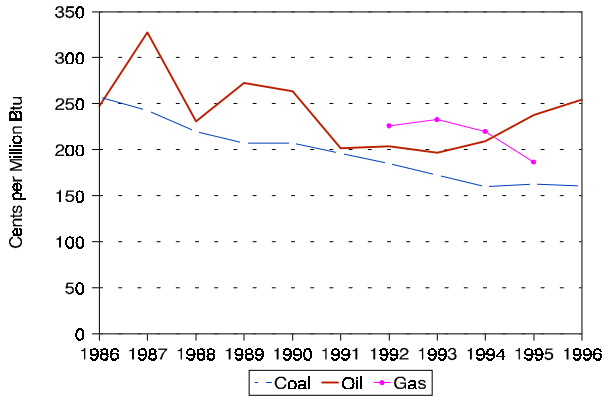

Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal	256.9	196.0	160.6	-4.6
Oil	247.4	201.8	254.4	0.3
Gas	--	--	--	--

-- = Not applicable.

Table 8. Electric Power Industry Emissions Estimates, 1986, 1991, and 1996
(Thousand Short Tons)

Emission Type	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Sulfur Dioxide	64	47	50	-2.5
Nitrogen Oxides[d] . .	18	22	14	-2.6
Carbon Dioxide[d] . . .	4,897	6,615	7,490	4.3

Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996

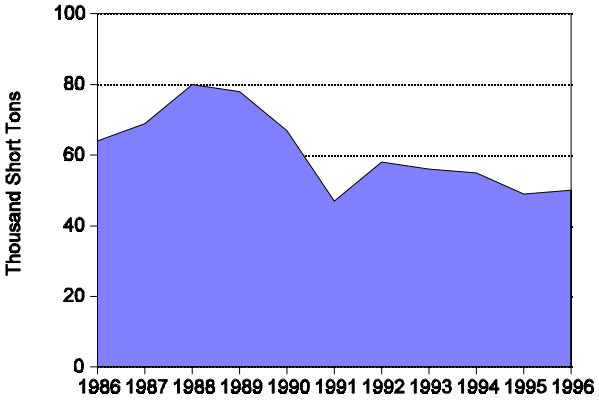

Figure 7. Estimated Nitrogen Oxide Emissions, 1986-1996

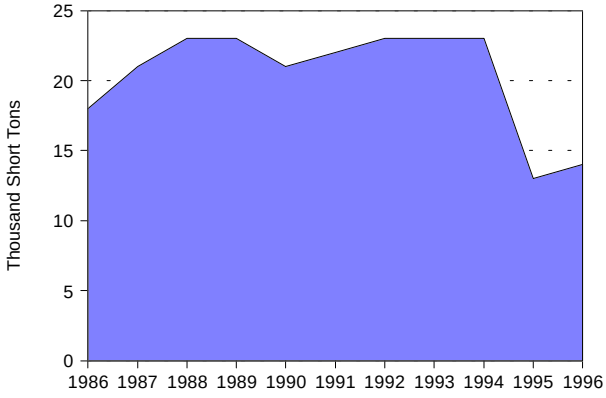

Figure 8. Estimated Carbon Dioxide Emissions, 1986-1996

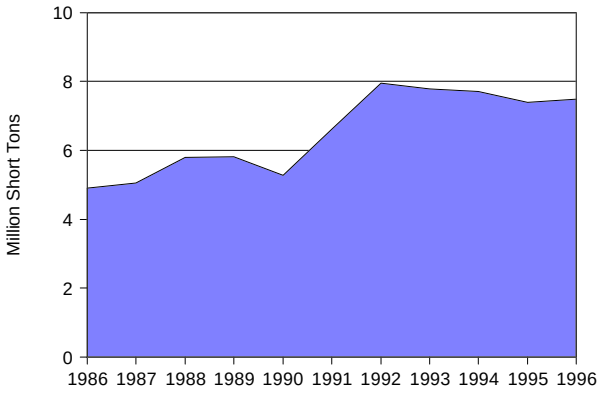

Table 9. Utility Retail Sales by Sector, 1986, 1991, and 1996
(Megawatthours)

Sector	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Residential . .	3,074,522	3,356,705	3,427,415	1.1	39.1	38.3	37.6
Commercial	1,663,357	2,029,125	3,238,893	6.9	21.1	23.2	35.5
Industrial . . .	3,079,066	3,265,025	2,334,068	-2.7	39.1	37.3	25.6
Other	55,087	110,919	127,058	8.7	0.7	1.3	1.4
Total	7,872,031	8,761,774	9,127,434	1.5	100.0	100.0	100.0

Figure 9. Nuclear Power Capacity Factor Comparison, 1986-1996

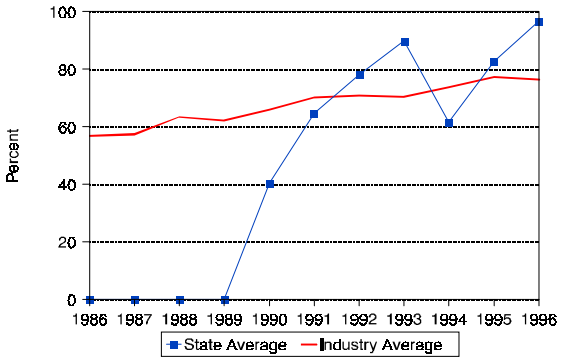

Table 10. Utility Retail Sales Statistics, 1986, 1991, and 1996

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
			1986		
Number of Utilities	7	5	--	1	13
Number of Retail Customers	435,541	9,610	--	52,884	498,035
Retail Sales (MWh)	7,291,454	115,741	--	464,836	7,872,031
Percentage of Retail Sales	92.6	1.5	--	5.9	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	696,409	9,885	--	47,794	754,089
Percentage of Revenue	92.4	1.3	--	6.3	100.0
			1991		
Number of Utilities	7	5	--	1	13
Number of Retail Customers	494,782	10,438	--	63,535	568,755
Retail Sales (MWh)	8,045,618	140,917	--	575,239	8,761,774
Percentage of Retail Sales	91.8	1.6	--	6.6	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	831,677	12,328	--	55,279	899,284
Percentage of Revenue	92.5	1.4	--	6.2	100.0
			1996		
Number of Utilities	6	5	--	1	12
Number of Retail Customers	516,836	10,420	--	68,136	595,392
Retail Sales (MWh)	8,333,324	163,979	--	630,131	9,127,434
Percentage of Retail Sales	91.3	1.8	--	6.9	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	963,874	14,802	--	79,475	1,058,151
Percentage of Revenue	91.1	1.4	--	7.5	100.0

-- = Not applicable.